

Ann Diers

From: Ann Bleed [ableed@dnr.state.ne.us]
Sent: Tuesday, February 28, 2006 7:54 AM
To: Russ Callan; Ron Bishop; Larry Hutchinson; Kirk Nelson; Kent Miller; John Turnbull; John Thorburn; Jim Nelson; Gloria Erickson; Duane Woodward; Duane Hovorka; Don Kraus; Dean Edson; Chad Smith; Brian Barels; Ann Diers; Butch Koehlmoos
Subject: Instream Flow Subcommittee March 3 10:00 NPPD Kearney



Agenda 3-3-06 Rule change Junior Water Right
Instream Flow Su...2-25-06 for Instre... Analyses.pd...

Here are the documents for the subcommittee meeting.

Ann

NEBRASKA ADMINISTRATIVE CODE

Title 457 - DEPARTMENT OF NATURAL RESOURCES
RULES FOR SURFACE WATER

Chapter 24 - DETERMINATION OF FULLY APPROPRIATED BASINS, SUB-
BASINS OR REACHES

001 FULLY APPROPRIATED. Pursuant to Neb. Rev. Stat. § 46-713(3) (Reissue 2004, as amended), a river basin, subbasin, or reach shall be deemed fully appropriated if the Department of Natural Resources determines that then-current uses of hydrologically connected surface water and ground water in the river basin, subbasin, or reach cause or will in the reasonably foreseeable future cause (a) the surface water supply to be insufficient to sustain over the long term the beneficial or useful purposes for which existing natural flow or storage appropriations were granted and the beneficial or useful purposes for which, at the time of approval, any existing instream appropriation was granted, (b) the streamflow to be insufficient to sustain over the long term the beneficial uses from wells constructed in aquifers dependent on recharge from the river or stream involved, or (c) reduction in the flow of a river or stream sufficient to cause noncompliance by Nebraska with an interstate compact or decree, other formal state contract or agreement, or applicable state or federal laws.

~~001.01~~ 001.01A Except as provided in ^{and} B below, ^f For purposes of Section 46-713(3)(a), the surface water supply for a river basin, subbasin, or reach shall be deemed insufficient, if, after considering the impact of all currently existing surface water rights and the lag effect from existing groundwater pumping in the hydrologically connected area that will deplete the water supply within the next 25 years, it is projected that during the period of May 1 through September 30, inclusive, any irrigation right ^{skt.} would have ~~it~~ been unable to divert sufficient surface water to meet on average eighty-five percent of the annual net crop irrigation water requirement, or, during the period of July 1 through August 31, inclusive, ^{skt.} would have ~~it~~ been unable to divert sufficient surface water to meet at least sixty-five percent of the annual net crop irrigation water requirement.¹

¹ The annual net crop irrigation water requirement is the net amount of water that must be applied by irrigation to supplement ^{skt.} stored soil water and precipitation and supply the water required for the full yield of an irrigated crop. The annual net crop irrigation water requirement does not include irrigation water that

For purposes of this rule, the “annual net crop irrigation water requirement” will be determined by the annual net irrigation water requirement for corn. This requirement is based on the average evapotranspiration of corn that is fully watered to achieve the maximum yield and average amount of precipitation that is effective in meeting the crop water requirements for the area.

The availability of stream flow will be based on the percentage of time junior rights ~~were~~ ^{would have been} able to divert water during the previous 20 year period and the projected impacts of depletions on stream flow from existing wells over the next 25 years.

001.01B If, at the time of the priority date of the right, any surface water right for irrigation could not have diverted surface water a sufficient number of days on average for the previous 20 years to satisfy the requirements in 001.01A, the surface water supply for a river basin, subbasin, or reach in which that surface water right is located shall be deemed insufficient only if, the average number of days surface water could have been diverted ^{at the full diversion rate} over the previous 20 years is less than the number of days surface water was available on average ^{at the full diversion rate} for the 20 years previous to the time of the priority date of the permit. When doing this comparison, the lagged impact of wells existing on the priority date of the permit must be considered when calculating the number of days surface water could have been diverted at the time of the priority date of the permit and the lagged impact of currently existing wells must be considered when calculating the availability of

appropriation → *global*

is not available for crop water use such as irrigation water that percolates through the crop root zone or that runs off the irrigated field.

water for the water right at the current time. The lagged impact to be considered shall be the impact of the lag effect from existing ground water pumping in the hydrologically connected area that will deplete the water supply over the next 25 years.

(C) In the event that the junior water rights are not irrigation rights, the Department will utilize a standard of interference appropriate for the use, taking into account the purpose

for which the appropriation was granted. If, at the time of the priority date of the right, any surface water right could not have ^{been fully ret. or diverted} diverted surface water a sufficient number of days on average to meet the water requirements [determined to be sufficient for the purpose of the water right], the surface water supply for a river basin, subbasin, or reach in which that surface water right is located shall be deemed insufficient only if, the average number of days surface water could have been ^{fully ret} diverted over the previous 20 years is less than the number of days surface water ^{could have been fully ret} was available on average for the 20 years previous to the time of the priority date of the permit. The impact of the lagged effect from wells shall be considered in the same manner as in Section 001.01B above.

Use of the method described in this rule is not intended to express or imply any mandate or requirement that the method used herein must be included in the goals and objectives of any integrated management plan adopted for a river basin, subbasin or reach determined to be fully appropriated under this rule. Further, nothing in this section is intended to express or imply a priority of use between surface water uses and ground water uses.

001.02 The geographic area within which the Department preliminarily considers surface water and ground water to be hydrologically connected for the purpose prescribed in Section 46-713(3) is the area within which pumping of a well for 50 years will deplete the river or a base flow tributary thereof by at least 10% of the amount pumped in that time.²

² The term "pumped" is defined as the net amount of water removed from the ground water reservoir; water initially removed by the pumping well that returns to the ground water reservoir is not included.

well
reads?

002 INFORMATION CONSIDERED. For making preliminary determinations required by Neb. Rev. Stat. Section 46-713 (Reissue 2004, as amended) the Department will use the best scientific data and information readily available to the Department at the time of the determination. Information to be considered will include:

- Surface water administrative records
- Department Hydrographic Reports
- Department and United States Geological Survey stream gage records
- Department's registered well data base
- Water level records and maps from Natural Resources Districts, the Department, the University of Nebraska, the United States Geological Survey or other publications subject to peer review
- Technical hydrogeological reports from the University of Nebraska, the United States Geological Survey or other publications subject to peer review
- Ground water models
- Current rules and regulations of the Natural Resources Districts

The Department shall review this list periodically, and will propose amendments to this rule as necessary to incorporate scientific data and information that qualifies for inclusion in this rule, but was not available at the time this rule was adopted.

001.01A Except as provided in B below, for purposes of Section 46-713(3)(a), the surface water supply for a river basin, subbasin, or reach shall be deemed insufficient, if, after considering the impact of the lag effect from existing groundwater pumping in the hydrologically connected area that will deplete the water supply within the next 25 years it is projected that during the period of May 1 through September 30, inclusive, any surface water irrigation right will on average be unable to divert surface water a sufficient number of days to meet eighty-five percent of the annual crop irrigation requirement, or, during the period of July 1 through August 31, inclusive, will be unable to divert surface water a sufficient number of days to meet sixty-five percent of the annual crop irrigation requirement.

001.01B If, at the time of the priority date of the right, any surface water right for irrigation could not have diverted surface water a sufficient number of days on average for the previous 20 years to satisfy the requirements in 001.01A, the surface water supply for a river basin, subbasin, or reach in which that surface water right is located shall be deemed insufficient only if, the average number of days surface water could have been diverted over the previous 20 years is less than the number of days surface water was available on average for the 20 years previous to the time of the priority date of the permit. When doing this comparison, the lagged impact of wells existing on the priority date of the permit must be considered when calculating the number of days surface water could have been diverted at the time of the priority date of the permit and the lagged impact of currently existing wells must be considered when calculating the availability of water for the water right at the current time. The lagged impact to be considered shall be the impact of the lag effect from existing ground water pumping in the hydrologically connected area that will deplete the water supply over the next 25 years.

Instream Flow Subcommittee Meeting

March 3, 2006

10:00 - 2:00

NPPD Kearney, Nebraska

1. Review potential rule changes
 - a. Previous suggested edits (see revision)
 - b. How to deal with criterion of sufficiency for instream flow right

2. Water Administration for Instream Flow Rights

3. NRD proactive approach - Lower Loup NRD

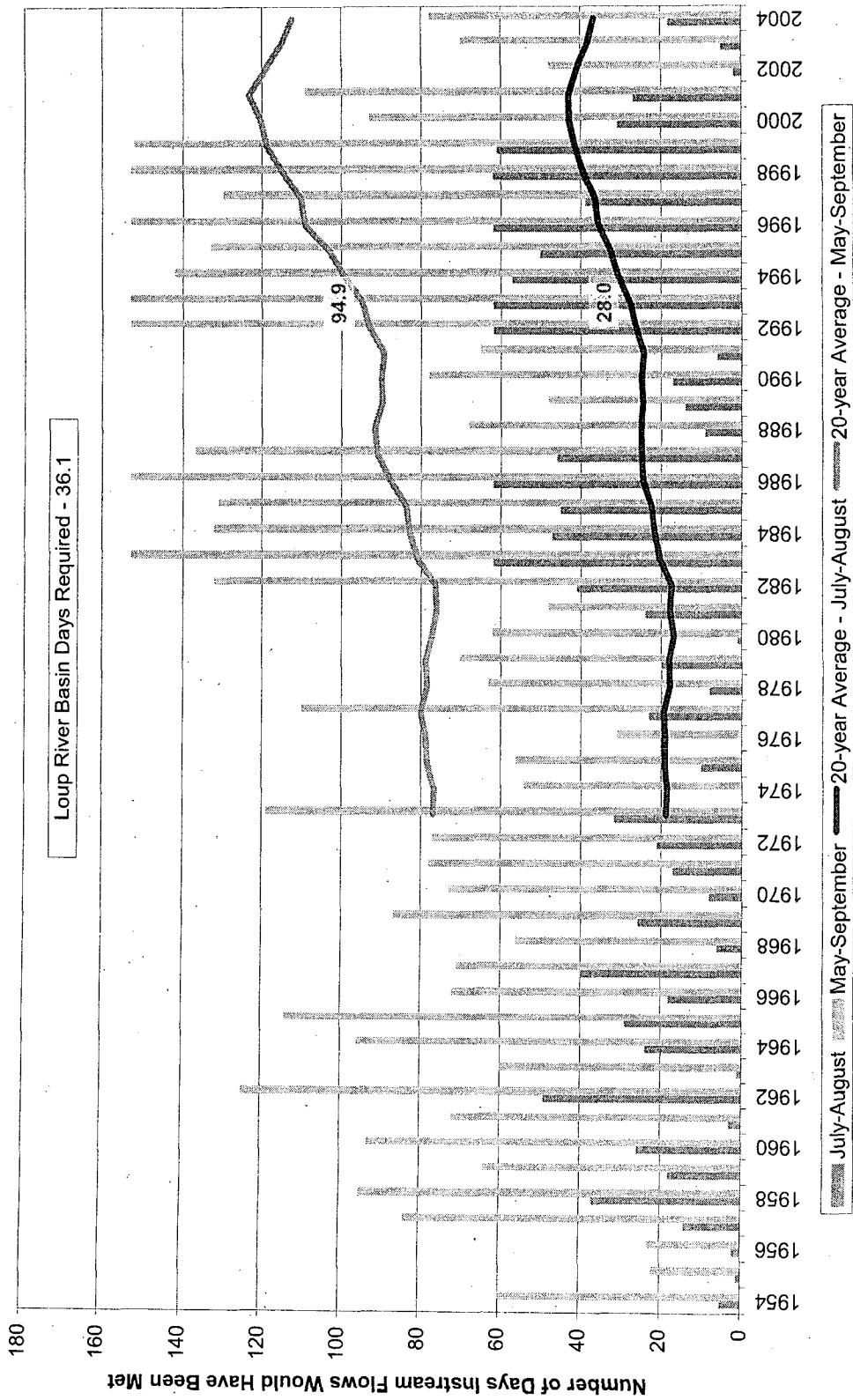
4. Other

Theoretical Analysis – Loup River Basin

The junior surface water appropriation with the greatest net corn crop irrigation requirement in the Loup River Basin is located on the headwaters of the Dismal River in Hooker County. Its priority date is May 1, 1994 and has a net corn crop irrigation requirement map, from the map that follows of 13 inches.

- The first test is whether number of days available under the depleted flows (lag impact analysis) is greater than the net corn crop irrigation requirement. The lag impact analysis showed that in the year 2030, the 20-year average number of days available for surface water diversion to be equal to 33.1 days. The highest possible net corn crop irrigation requirement is 13 inches, which corresponds to 34.5 days necessary to divert 65% of that value. Since the 33.1 days available for surface water diversion is less than the 34.5 days required to meet 65% of the corn crop irrigation requirement, the number of days available when the appropriation was granted must be determined.
- At the time the junior surface water appropriation was applied for (May 1, 1994) the 20-year average number of days available was 28.0 days. Since the 33.1 days available for surface water diversion is greater than the 28.0 days that were available at the time the junior surface water appropriation was applied for, no additional analyses are necessary and the basin is not fully appropriated.

North Bend Instream Flow Appropriation Analysis



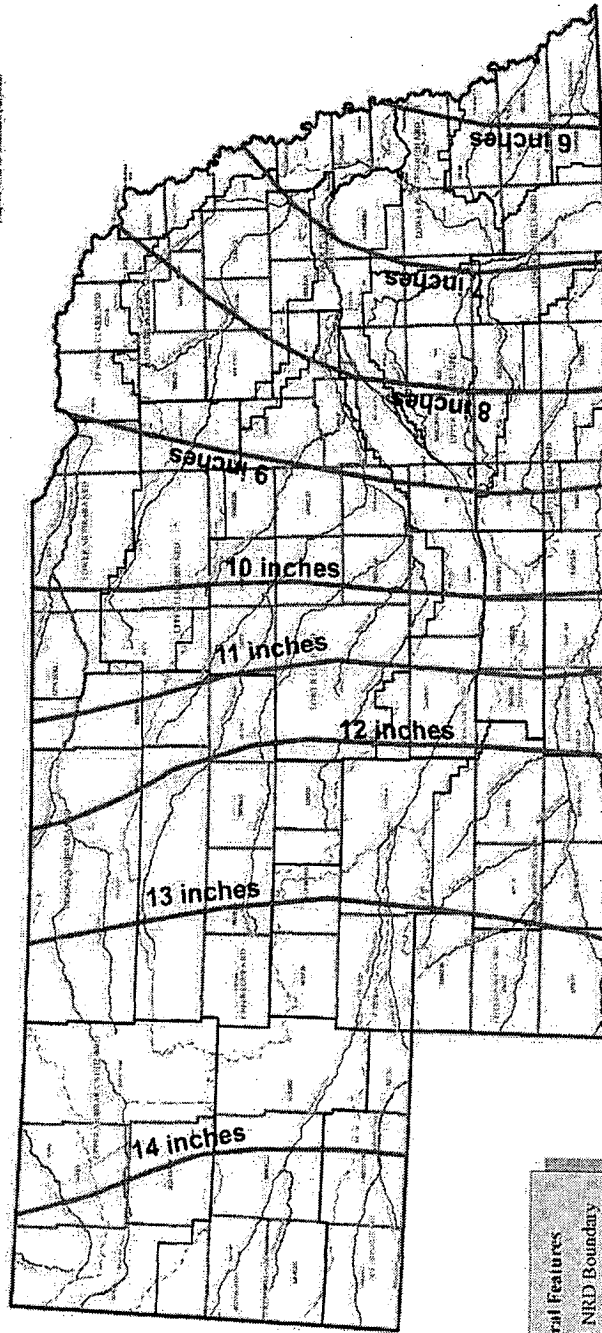


Planning and Assistance Division

CORN CROP IRRIGATION REQUIREMENT STATE OF NEBRASKA



This map is intended to serve as a general guide for planning purposes. It is not intended to be used as a legal document or to determine actual irrigation requirements. The user is responsible for obtaining the necessary data and information to determine actual irrigation requirements. The user is also responsible for obtaining the necessary data and information to determine actual irrigation requirements. The user is also responsible for obtaining the necessary data and information to determine actual irrigation requirements.



Cultural Features

- NRD Boundary
- County Boundary
- State Boundary

Nebraska Basins

Corn Crop Irrigation Requirement

